ACCELERATING CLEANUP:
FOCUS ON 2006

DISCUSSION DRAFT

June 6, 1997

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ADS	activity data sheet
BEMR	Baseline Environmental Management Report
BHI	Bechtel Hanford, Inc.
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CO_2	carbon dioxide
D&D	Decontamination and decommissioning
DOE-HQ	U.S. Department of Energy, Headquarters
DOE-RL	U.S. Department of Energy, Richland Operations Office
DNFSB	Defense Nuclear Facility Safety Board
EA	environmental assessment
EIS	Environmental Impact Statement
EM	environmental management
ER	Environmental Restoration
ERC	Environmental Restoration Contract
FFTF	Fast Flux Test Facility
FMEF	Fuels and Materials Examination Facility
HLW	high-level waste
IPL	integrated priority list
LAW	low activity waste
LDUA	light duty utility arm
LLMW	low-level mixed waste
LLW	low level waste
NEPA	*National Environmental Policy Act of 1969*
PBS	project baseline summary
PFP	Plutonium Finishing Plant
PHBS	Project Hanford Breakdown Structure
PHMC	Project Hanford Management Contract
PNNL	Pacific Northwest National Laboratory
PUREX	Plutonium Uranium Extraction Facility
RCRA	*Resource Conservation and Recovery Act of 1976*
REDOX	reduction oxidation
ROI	return on investment
SNF	spent nuclear fuel
SNM	special nuclear material
STCG	Site Technology Coordination Group
S&M	surveillance and maintenance
TPA	Tri-Party Agreement
TRU	transuranic waste
TWRS	Tank Waste Remediation System

LIST OF TERMS (Continued)

WESF	Waste Encapsulation and Storage Facility
WIPP	Waste Isolation Pilot Project
WRAP I	Waste Receiving and Processing Facility Module I

1.0 INTRODUCTION

Within a decade, the U.S. Department of Energy, Headquarters (DOE-HQ)-directed environmental management program will complete cleanup at most sites. At a small number of sites, including Hanford, treatment will continue for the remaining waste streams. This unifying vision will drive budget decisions, sequencing of projects, and actions taken to meet program objectives. The vision will be implemented in collaboration with regulators, stakeholders, and Tribal Nations.

The principles of the environmental management program are as follows:

- Protect worker and public health and safety
- Eliminate the most urgent risks
- Reduce mortgage and support costs
- Reduce generation of wastes
- Create a collaborative relationship with regulators, stakeholders, and Tribal Nations
- Focus technology development on cost and risk reduction
- Integrate waste treatment and disposal across sites.

As part of this program, the U.S. Department of Energy, Richland Operations Office (DOE-RL) is providing this document to describe what will be accomplished at Hanford, with emphasis on the next 10 years. Development of this plan is guided by the following assumptions directed by DOE-HQ:

- The budget is level over the ten-year period.
- Cleanup at most sites is complete by 2006 or earlier.
- Strong stakeholder/Tribal Nations values are recognized.
- Urgent risks are reduced first.
- Innovative technologies are used to reduce costs.
- Use of cost-effective privatization is maximized.
- Integration across programs and sites is optimized.

The planning assumptions and associated future decisions reflected in this plan have been made to support development of the site cleanup baseline. These assumptions and discussions are contingent on future decisions made under the *National Environmental Policy Act of 1969* (NEPA), *Resource Conservation and Recovery Act of 1976* (RCRA), and *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) decision-making processes.

2.0 HANFORD SITE ENVIRONMENTAL MANAGEMENT LIFE CYCLE CLEANUP PLAN - SUMMARY

2.1 SITE MISSIONS

Hanford's environmental management (EM), or cleanup mission is to protect the health and safety of the public, workers, and the environment; remediate/eliminate hazards; control hazardous materials; and utilize the assets (people, infrastructure, site) for other missions. Hanford's science and technology mission is to develop and deploy science and technology in the service of the nation, including stewardship of the Hanford Site. Through these missions, Hanford contributes to economic diversification of the region. This 2006 Plan specifically addresses the EM cleanup mission for the Site.

For the purpose of this 2006 Plan and associated Life Cycle Costs, the Hanford Site EM Cleanup Mission is finished upon completion of the last defined final end point target. It is recognized that site stewardship activities, to include long-term maintenance and monitoring will continue well beyond this point. For end points achieved before the end of the EM Cleanup Mission, e.g., tank closure, the follow-on stewardship activities will continue as part of the EM Cleanup Mission up until the last end point has been achieved. At that time it is assumed a new site stewardship mission would be initiated at the Hanford Site. Other missions are also expected to continue at the Hanford Site beyond the completion of the EM Cleanup Mission, primarily in the area of science and technology. Note that the currently defined final end point for the Hanford Site EM Cleanup Mission is "Remove non-essential, surplus buildings and facilities that don't have identified post-cleanup uses" in all areas of the Site.

2.2 SITE ENVIRONMENTAL MANAGEMENT MISSION GOALS

2.2.1 Geographic Areas

Columbia River: Pending Congressional action on the Wild and Scenic River designation, use will continue to be restricted; sensitive ecological, cultural, and native American resources will be protected.

Reactors on the River: Remove and/or stabilize spent fuel, surplus facilities, and waste sites to protect groundwater and the Columbia River and to ensure protection of people, the environment, and natural/cultural resources.

Central Plateau: The 200 Areas and central plateau will be used for the management of nuclear materials, for the collection and disposal of waste materials that remain onsite, and for other related and compatible uses. Cleanup levels and disposal standards will be established that are consistent with these long-term uses.

South 600 Area: The 300 Area waste sites, materials and facilities will be remediated to allow industrial and economic diversification opportunities. The Federal government will retain ownership of land in and adjacent to the 300 and 400 Areas, but will lease land for private and public uses to support regional industrial and economic development. Excess land within the 1100 Area will be targeted for transition to non-Federal ownership.

Central Core: This area will remain in Federal ownership consistent with safety analysis boundaries and continued waste management operations in the 200 Areas. These areas will be available for other Federal programs or leased for non-Federal uses, consistent with appropriate recognition of cultural and ecosystem values.

2.2.2 Material Categories

Spent Fuel: Spent Nuclear Fuels will be prepared and packaged, as necessary, for interim, dry-storage onsite, and shipped offsite for disposal in a national repository.

Groundwater: Groundwater remains restricted for a yet to be determined period pending decisions on final attainable cleanup levels. Remediation actions will protect the Columbia River and the near-shore environment, reduce contamination entering the groundwater and control the migration of plumes that threaten groundwater quality beyond the boundaries of the Central Plateau.

Soil Sites: Contaminated soil sites will be treated to levels supportive of future use targets or regulator specified levels for each geographic area as prescribed in CERCLA/RCRA decisions.

Facilities Transition: Safe, stable, secure onsite storage will be provided for all nuclear materials pending decisions on final disposition or until beneficial offsite uses are identified. Facilities without identified future uses will be transitioned to low-cost, stable deactivated conditions (requiring minimal surveillance and maintenance), pending eventual decontamination and decommissioning (D&D) and removal or closure.

Facilities D&D: Surplus facilities will be decommissioned and decontaminated sufficiently to enable removal or closure through entombment.

Solid Waste: Solid wastes will be dispositioned consistent with national policies for management of transuranic, low-level, low-level mixed, and hazardous wastes. Hanford will continue to receive onsite and offsite wastes for disposal in the 200 Areas.

Radioactive Tank Waste: Waste from both single-shell and double-shell tanks will be retrieved for immobilization. Waste will be separated into high-level waste (HLW) and low activity waste (LAW) fractions. LAW will be immobilized and disposed of onsite. HLW will be immobilized for disposal in an offsite Federal repository.

2.3 SITE BASELINES

2.3.1 Project Hanford Breakdown Structure

The Project Hanford Breakdown Structure (PHBS) (Figure 2-1) portrays the relational structure of site projects and ties those projects to project baseline summaries (PBS). The PBSs describe in detail the workscope related to each of the projects included in the PHBS. A definition of each of the projects represented in the boxes is located in Appendix A. For each PBS, a very clear, concise statement is provided. Each statement describes the condition of each project when the mission is completed. A table that provides a tie, or "crosswalk" of these PBSs to the EM activity data sheets (ADS) used in prior years is included as Appendix B.

The interim endpoint and final endpoint targets for the cleanup mission are displayed in Appendix C. The Spent Nuclear Fuel and most Facilities Transition projects have endstate targets within the 10-year window; Tank Waste Remediation System, Solid Waste, and Environmental Restoration endstate targets extend beyond fiscal year 2006.

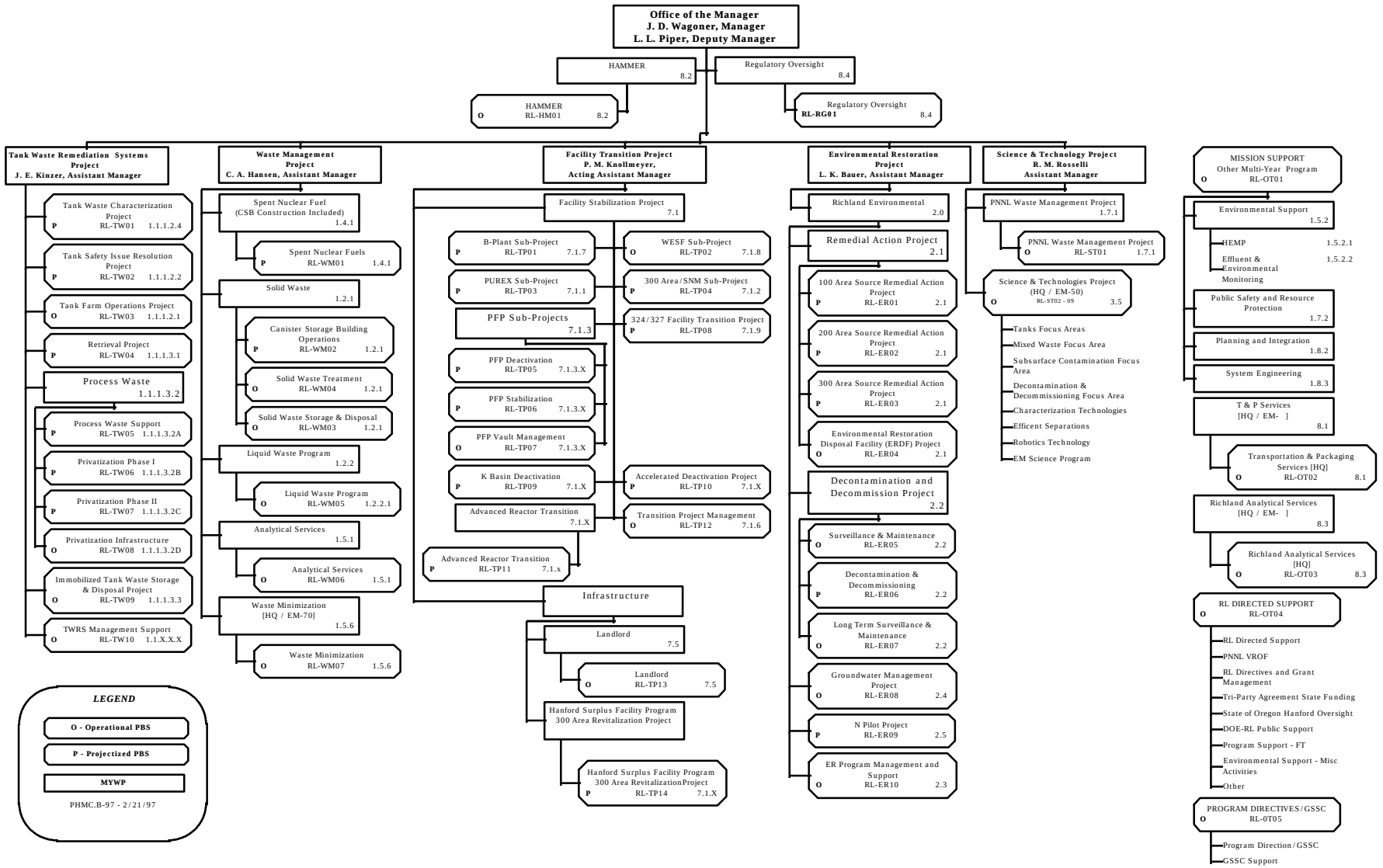
2.3.2 Site Cleanup Schedule

The Hanford Site cleanup schedule (Figure 2-2) portrays significant activities for each of the major site projects. Significant milestones are listed in Table 2-1. The more detailed site Summary Schedule is provided in Appendix D. Due to limited funding, the current strategy places near-term focus on reducing the site's urgent risks and mortgages, and complying with enforceable agreements. This approach is critical toward making funds available in the near future to better support site environmental restoration activities and disposition of stored wastes and materials.

Environmental restoration is currently being carried out at a minimal level, with emphasis on restoration of the areas along the Columbia River and protection of the river itself. Future restoration efforts, such as disposition of the reactors along the river and the cleanup/stabilization of the Hanford Site 200 Area Plateau, will require increased levels of funding in order to accomplish them efficiently and in a reasonable time period.

Numerous wastes and materials requiring ultimate disposition are currently stored on the Hanford Site. These include high-level tank wastes destined for the HLW repository, transuranic wastes (TRU) generated after 1970 are destined for the Waste Isolation Pilot Project (WIPP),

Figure 2-1. Project Hanford Breakdown Structure.



NOTE: PBS identification based on Mission Planning Buidance (MPG) 97-PIB-197.

Figure 2-2. Hanford Site Cleanup Schedule.

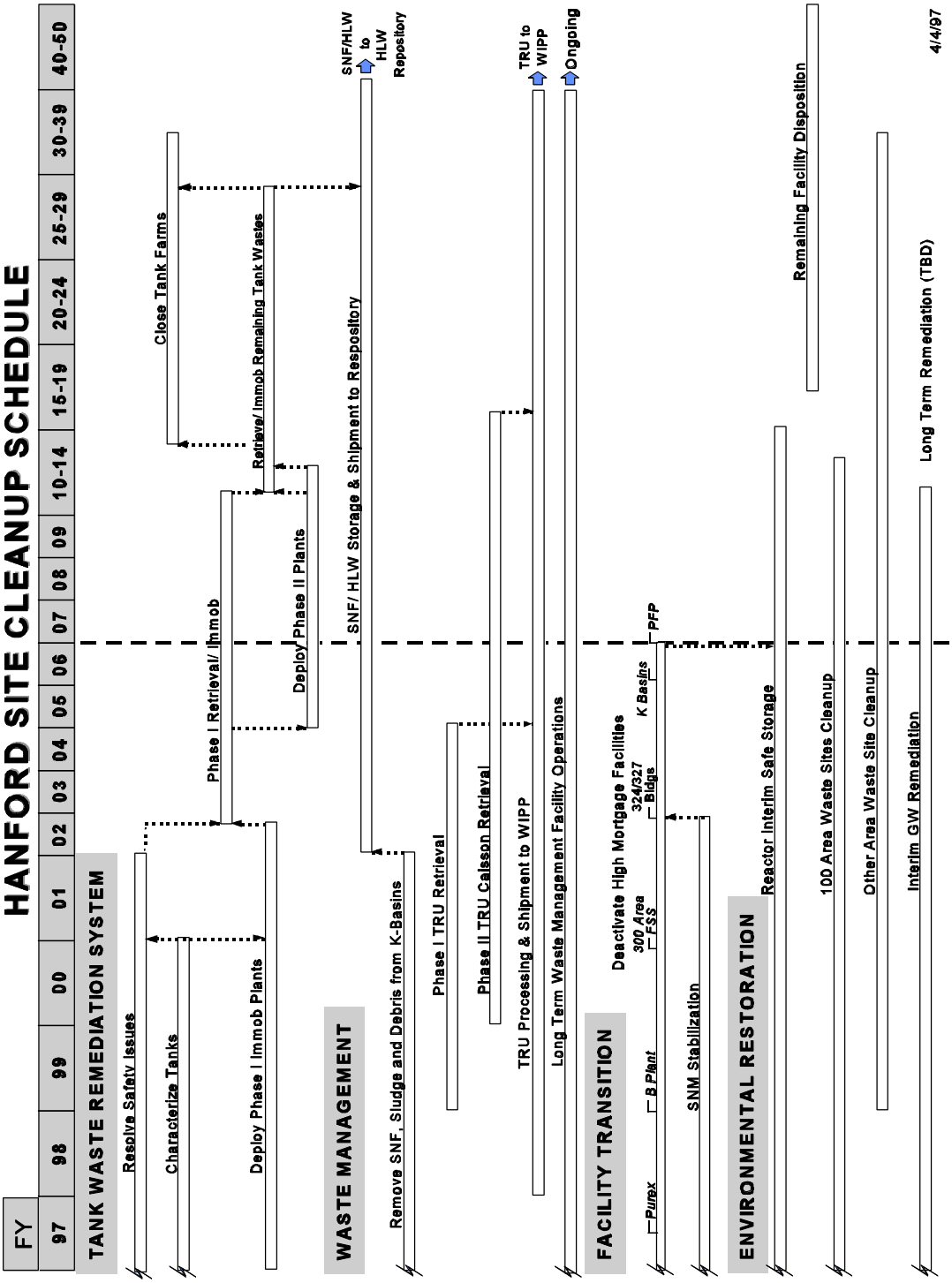


Table 2-1. Significant Milestones. (2 sheets)

Milestone	Date
TANK WASTE REMEDIATION SYSTEM	
All 177 tanks initial waste characterization complete	09/29/00
Interim stabilize all 149 SSTs	09/29/00
SST Closure Demo	09/29/00
Mitigate/resolve tank safety issues	09/28/01
Cs/Sr Capsule disposition determined	09/30/05
Immobilization of waste initiated	10/03/11
Complete closure of all SST Farms	09/30/24
Complete vitrification of Hanford low-level waste	12/31/24
All tank waste immobilized	09/29/28
Complete vitrification of Hanford high-level tank waste	12/29/28
Complete pretreatment processing of Hanford tank waste	12/31/28
SOLID WASTE	
WRAP 1 operating	03/31/97
Thermal treatment of LLMW started	12/31/00
Phase I retrieval complete	09/30/04
Complete T Plant operations	09/30/18
Complete WRAP I operations	09/30/31
Complete waste shipments to WIPP	09/30/31
Complete CSB operations	09/30/39
LIQUID WASTE	
340 Facility to transition	03/29/02
All treated effluent facility operations complete	09/30/35
SPENT NUCLEAR FUEL	
Start K Basin fuel removal operations	05/31/98
K Basin fuel removal complete	07/31/00
K Basin debris removal complete	02/26/01
K Basin sludge removal complete	08/30/01

Table 2-1. Significant Milestones. (2 sheets)

Milestone	Date
ENVIRONMENTAL RESTORATION	
N Reactor deactivation completed	09/30/97
C Reactor Interim safe storage completed	09/30/98
Disposal of over 2.6 million cubic yards of LLMW completed	09/30/06
Complete remedial actions for all non-tank farm operable units	09/28/18
FACILITY TRANSITION	
PUREX transition completed	07/31/97
SNM shipped out of 300 Area	09/30/98
B Plant transition to S&M completed	09/30/98
309 Facility transition to S&M completed	09/30/00
300 Area B-Cell clean out completed	09/30/00
Complete 324/327 facility cleanup	09/30/02
Complete K-Basin cleanup	12/01/05
PFP cleanup and Transition to S&M completed	09/26/06
Complete all facility deactivations	09/30/38

PUREX = Plutonium Uranium Extraction Facility
SNM = Special nuclear material
SST = Single-shell tank
S&M = Surveillance and maintenance
WRAP 1 = Waste Receiving and Processing Facility Module I

mixed low-level wastes requiring treatment prior to disposal, cesium and strontium capsules, spent nuclear fuel (SNF), and plutonium.

A major privatization effort has been initiated for disposition of the tank wastes at Hanford. Therefore, efforts which support this, including characterization of wastes and waste retrieval, must be kept on schedule to preclude delay of the privatization effort.

2.3.3 Site Performance Metrics

Wastes: The current Hanford stored waste inventory comprises 89% HLW, 7% TRU and 4% low level mixed waste (LLMW) by volume. Through the 10-year planning window, only 5% of the total waste volume will have been reduced, but the infrastructure will be in place to accelerate this activity. In fact, total waste volumes will dip below 50% of fiscal year 1997 levels just after fiscal year 2020. Appendix E contains the detailed waste information for the Hanford Site. This information reflects data contained in the April PBSs, and will be updated for the final version.

Actual inventory reductions over the 10-year planning window for HLW amount to 4% of the total inventory. Significant new HLW volumes appear in fiscal year 2012 as a product of initiating TWRS Privatization Phase 2. Much of the new waste will be converted to low level waste (LLW) and disposed onsite (see corresponding increases to LLW treatment and disposal).

The actual disposal of treated HLW will not occur until fiscal year 2035, when waste shipments from Hanford to the Yucca Mountain repository are initiated.

Treatment and disposal of TRU waste result in 55% reductions in inventory through the 10-year planning window. The bulk of the remaining treatment and disposal effort occurs in the period fiscal year 2007 - fiscal year 2015, with the last disposal shipments taking place in fiscal year 2033, when WIPP ceases to take on treated waste for long-term storage. Hanford would then retain in inventory any remaining TRU waste and await disposition instructions.

Despite the LLMW inventory increase of 20% before treatment and disposal efforts begin in fiscal year 2000, aggressive disposal efforts result in an 80% reduction in inventory over the 10-year planning window. The downward trend in inventory levels will continue until fiscal year 2011 when, as a result of HLW treatment, new LLMW will keep inventories above the fiscal year 2006 level over the next 20 years.

Low level waste usually requires little treatment, depending upon the contamination level, therefore much of the new LLW generated is sent immediately to disposal. As mentioned previously, the HLW treatment efforts create significant new waste to be disposed of in the fiscal year 2012 - fiscal year 2023 timeframe.

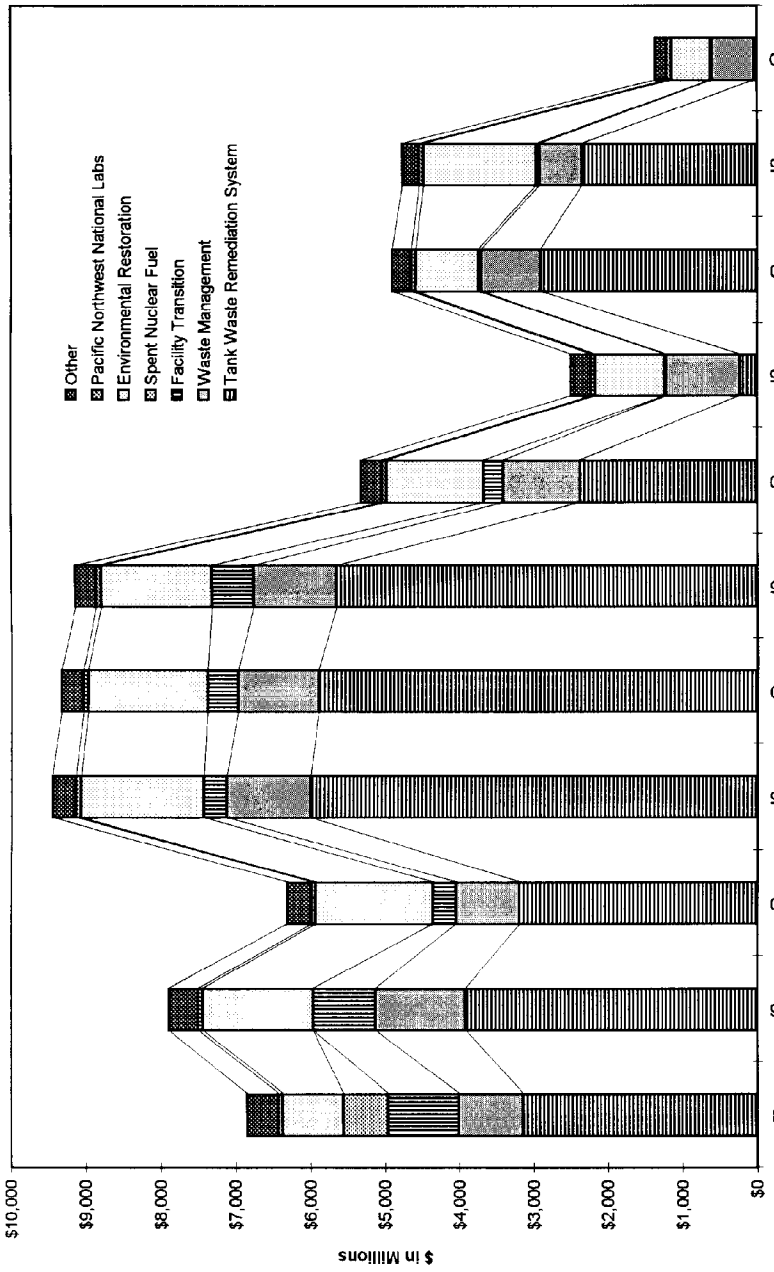
Materials: At this time the cesium/strontium capsule inventory (identified as “other nuclear material”) will be stored at the Waste Encapsulation and Storage Facility (WESF) indefinitely. However, several options are being considered. One option is to transfer the capsule inventory to Tank Waste Projects in fiscal year 2010 where it would be mixed with other HLW and subsequently treated and disposed. The inventory drops to nearly zero after 2010 if this option is selected.

Spent Nuclear Fuel will remain onsite until approximately 2037 when it will be shipped to the National repository. However, the Spent Nuclear Fuel Project will end when the fuel is removed from the K Basins and other onsite spent nuclear fuel is relocated to the 200 Area ISA (except the sodium-bonded fuel, which will go to INEL). When the Spent Nuclear Fuel Project ends, ownership of the Canister Storage Building will be transferred to Canister Storage Building Operations.

2.3.4 Life Cycle Cost Profile

The life cycle cost profile is portrayed in Figure 2-3. This cost profile portrays the baseline planning represented in Section A of the PBSs.

Figure 2-3. Life Cycle Cost Profile.



	FY97-01	FY02-06	FY07-10	FY11-15	FY16-20	FY21-25	FY26-30	FY31-35	FY36-40	FY41-45	FY46-50
Tank Waste Remediation System	$3,143	$3,921	$3,192	$5,995	$5,888	$5,647	$2,378	$225	$2,907	$2,351	$33
Waste Management	$866	$1,211	$860	$1,126	$1,081	$1,116	$1,025	$992	$795	$568	$565
Facility Transition	$951	$829	$304	$303	$406	$556	$265	$20	$41	$45	$15
Spent Nuclear Fuel	$601	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Environmental Restoration	$802	$1,476	$1,577	$1,643	$1,601	$1,475	$1,302	$928	$838	$1,508	$530
Pacific Northwest National Labs	$65	$65	$52	$65	$65	$65	$65	$65	$65	$65	$65
Other	$423	$393	$336	$324	$289	$282	$279	$275	$258	$225	$157
Total	**$6,851**	**$7,896**	**$6,320**	**$9,456**	**$9,330**	**$9,140**	**$5,314**	**$2,503**	**$4,902**	**$4,761**	**$1,384**

Note: Cost profiles for the TWRS program include the Privatization Set Aside; increases in FY 2036-2045 are a result of anticipated disposal fees to be paid to Yucca Mountain.

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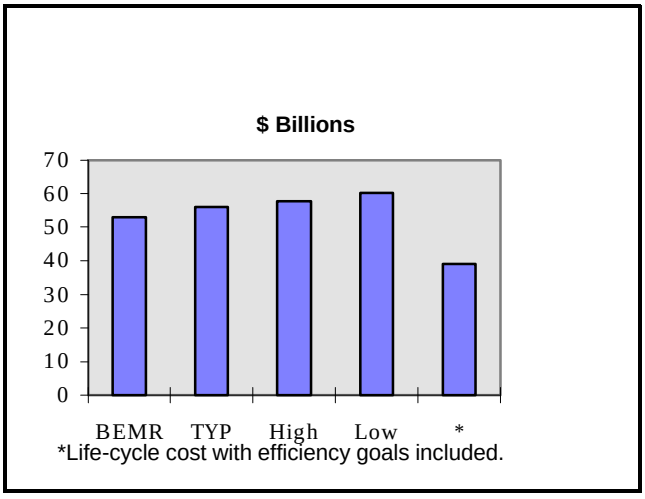
The accompanying chart (Figure 2-4) represents the 2006 Plan life cycle costs in fiscal year 1998 dollars for completion of the cleanup mission, compared with previous Baseline Environmental Management Report (BEMR) estimates. The 2006 Plan baseline as well as the high and low funding scenario life cycle costs are shown. Compared with the BEMR estimate, increased life cycle cost of the 2006 Plan baseline (~$3 billion) is attributed to the fact that TWRS privatization infrastructure costs, increased TWRS storage and disposal costs, and long-term waste management operations are not included in BEMR. Further details of the changes that have occurred since the BEMR was issued are included in Appendix F. Additional incremental costs are incurred in the high and low funding scenarios from lengthening the time to complete cleanup.

Figure 2-4. Life Cycle Cost Comparison with Baseline Environmental Management Report.



If the $2.5 billion cost efficiencies through 2006 described in Section 4.1 are met, anticipated life-cycle cost is approximately $39 billion. Potential technology development (unidentified) could further reduce the $39 billion.

For all direct-funded Hanford Site cleanup activities, activity-based cost estimates and critical analyses have been fully developed, performed, or scheduled for project work representing 80% of the costs. In addition, independent reviews have been performed on more than 80% of the current budget cycle program costs. Together, these reviews have demonstrated the validity of project estimated costs.

Appendix G contains a funding table that provides a crosswalk between appropriations for fiscal year 1997 and fiscal year 1998.

2.3.5 Workforce Required

Figure 2-5 portrays the staffing forecast over the ten-year period for the Project Hanford Management Contract (PHMC), Pacific Northwest National Laboratory (PNNL), and Environmental Restoration Contract (ERC) required to accomplish the EM mission. The staffing in fiscal year 1997 is 8,120; dropping to 5,244 by fiscal year 2006.

2.3.6 Technology Development

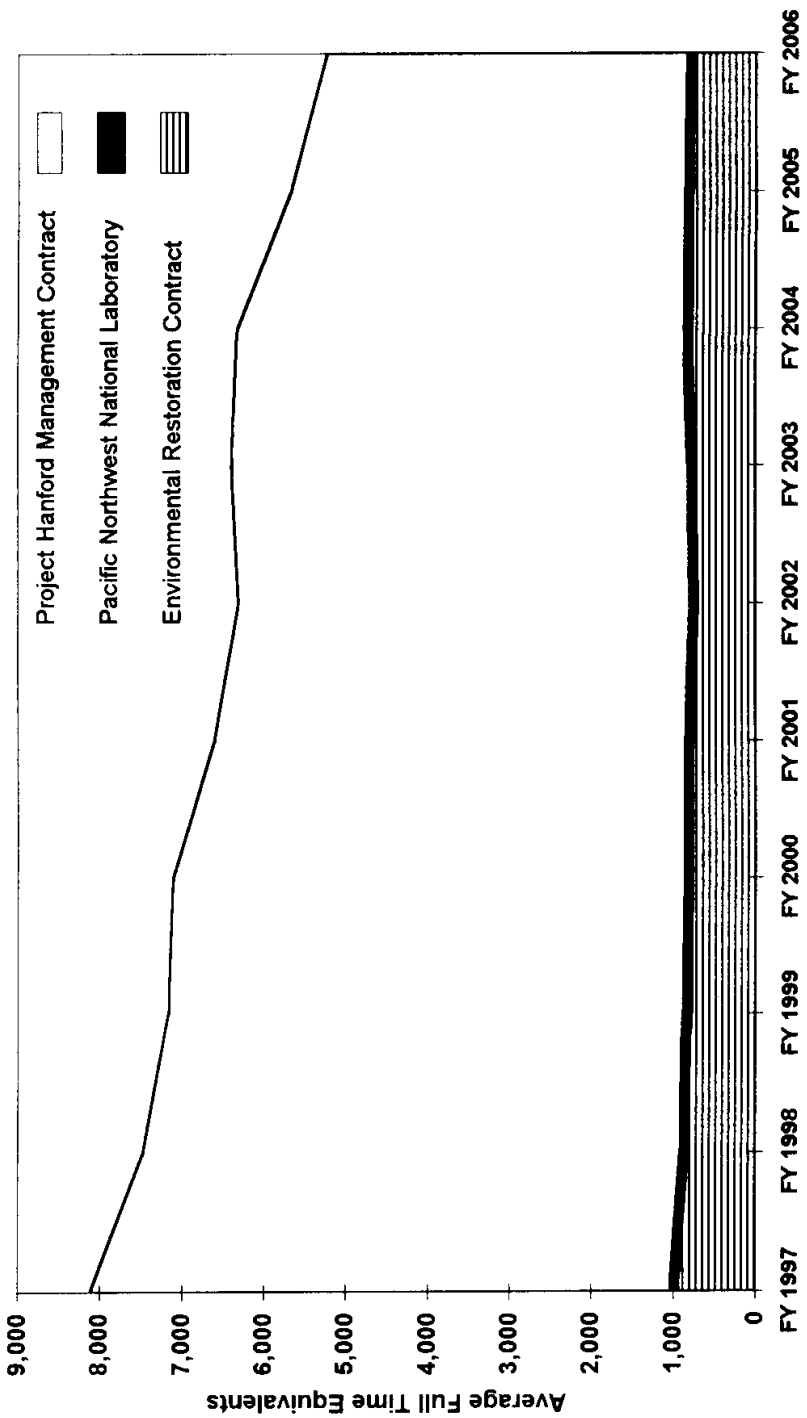
Over 80 technology needs and 38 science needs have been identified by the programs and the Hanford Site Technology Coordination Group (STCG). All of the needs coincide with project goals and objectives described in the 2006 Plan. The STCG science needs support research and development needed to accomplish cleanup goals beyond the 2006 Plan. Much of the success in achieving 2006 Plan goals depends on the ability of innovative technologies to reduce cost and risk and to do what cannot be done with existing methods. Currently, the relatively few technology activities focused on reducing the cost and risk associated with the current baseline yield a minimum cost savings/avoidance potential of $400 million.

Key baseline technology activities for the Hanford cleanup mission include (1) Hanford tanks initiative deployments such as the light duty utility arm (LDUA) and the cone penetrometer system for vadose zone characterization; (2) macro encapsulation of LLMW; and (3) carbon dioxide (CO_2) pellet decontamination to eliminate secondary waste streams. In addition, key breakthrough technology activities for Hanford cleanup include (1) clean salt for LLW volume minimization; (2) sludge washing for HLW volume reduction; (3) remote laser cutting; (4) C-Reactor interim storage demonstration (e.g., structural steel decontamination, waste sorting and segregation); and (5) in situ reduction oxidation (REDOX) manipulation of chromium in groundwater.

As more of the developing breakthrough technologies are deployed, the cost savings/avoidance potential can rise by an order of magnitude. We will be looking to other sites, industries, national laboratories, universities, and others to find better technology. Such recent projects as the Deployment Center and the Advanced Process Engineering Laboratory will be instrumental in attracting the non-Hanford technologies. These projects are factored into the benefit calculations, increasing the savings by a similar amount for a total potential savings approaching $8 billion.

Appendix H contains more details about these technologies.

Figure 2-5. Staffing Forecast.



	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Project Hanford Management Contract*	7,071	6,548	6,278	6,248	5,752	5,502	5,565	5,451	4,810	4,393
Environmental Restoration Contract	944	829	794	767	766	715	741	789	778	754
Pacific Northwest National Laboratory	105	102	103	103	98	98	98	98	98	97
Total	8,120	7,479	7,175	7,118	6,616	6,315	6,404	6,338	5,686	5,244

* Based on January 31, 1997, funding and FTE estimates. Excludes Fast Flux Test Facility/Fuels and Materials Examination Facility transferred to Nuclear Energy.
FTEs are averages for each fiscal year, with PNNL/BHI FTEs based on the High funding case
All subcontractors, except Fluor Daniel Hanford Enterprise Companies, are excluded. TWRS Privatization is excluded.
Richland Operations Office Federal FTEs will be compiled at HQ, thus are excluded here.

2.3.7 Key Issues

There are several types of issues at the Hanford Site. Technical issues affecting waste cleanup and mission endstates. Schedule interface issues affect site logistics, and stakeholder issues affect both logistics and endstates. A current issue concerns placement of K-Basin sludge in double-shell tanks. The characterization and disposition criteria for sludge placement have yet to be finalized. An acceptable endstate definition for the canyon facilities is another current issue. Appendix I summarizes these and other current Hanford Site key issues.

2.3.8 Environmental Regulatory Compliance

The Hanford Site complies with numerous Federal and state requirements and many agreements and orders. Major environmental laws that apply to the program include CERCLA, RCRA, the *Clean Water Act*, the *Clean Air Act*, and NEPA. DOE-RL will comply with NEPA through adherence to DOE Order 451.1, and the DOE NEPA Implementing Procedures (10 CFR 1021). NEPA documents prepared by DOE-RL tier from DOE-wide programmatic environmental impact statements (EIS) or previous Hanford Site EISs. For example, DOE-RL will prepare the proposed Hanford Solid Waste Management EIS to evaluate the environmental impacts of proposed future actions at the Hanford Site, including local implementation of decisions made in the Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste. Planned NEPA documentation for the next two years is discussed in the DOE-RL Annual National Environmental Policy Act Planning Summary. CERCLA documentation making decisions for cleanup activities incorporate NEPA values (see Appendix J).

Historic resources and cultural values present at Hanford are subject to a number of Federal laws and Executive Orders and are considered in all DOE planning activities. Among these are the National Historic Preservation Act, Archaeological Resources Protection Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, and Sacred Sites Executive Order 13007.

Substantial progress has been made in managing the cleanup program and meeting enforceable Tri-Party Agreement (TPA) milestones. The Tri-Party Agreement is a legally enforceable 30-year compliance agreement schedule that serves as the basic framework and blueprint for Hanford Site cleanup and is the primary implementing vehicle for achieving requirements under RCRA and CERCLA. The agreement identifies a required process for modifications/addendum and has widespread public support in the Northwest and a commitment to public involvement.

The majority of the Site's budget is driven by regulatory compliance; adequate funding is necessary to fulfill TPA milestone commitments. All sixty-seven fiscal year 1996

milestones were met on or ahead of schedule or renegotiated. With current funding, most TPA milestones are expected to be met in fiscal year 1997. Our goal is to continue maintaining TPA compliance for existing commitments.

2.4 PROGRESS TO DATE

There has been substantial progress to date in the Hanford Site cleanup mission. Progress has been realized in cleanup and in increased efficiency. Over 50% of the 1,450-square-kilometer (560-square-mile) Hanford Site land area has been declared clean. These areas include the North Slope and the Arid Lands Ecology Reserve. All contaminated liquid discharges to the soil have been stopped. Schedule accelerations (e.g., cesium capsule returns from hot cell facilities to the storage pools at the Waste Encapsulation and Storage Facility [WESF]) have also reduced both risk and mortgage.

The TWRS annual budget has been reduced from approximately $600M in fiscal year 1994 to approximately $300M in fiscal year 1998 as the result of productivity improvements and the planned privatizing of tank waste disposal. Productivity improvements include working more efficiently, clearly defining roles and responsibilities, reengineering/continuous improvement, and reduced inventories. Productivity commitments at other facilities have resulted in additional savings. Tank waste characterization has been reduced to focus on the requirements to safely operate the tanks, and transfer waste between tanks. Other cost savings include reducing the frequency of certain facility surveys. Plans for facility modifications necessary to support the privatized treatment and disposal of waste have been integrated.

Site-wide cost savings have also been implemented. Using a systems engineering process for all support services, the Hanford Site is determining its tie to mission requirements and safe operations, eliminating support services not tied to mission requirements and safe operations, setting service levels according to mission requirements, and obtaining services at competitive prices. A reduction of 18% in support costs over the past three years has resulted in a 5% funding increase in mission cleanup dollars (see Figure 2-6).

Indirect costs during the same period have been reduced 26% (see Figure 2-7). In addition to the reduction in indirect costs accomplished from fiscal year 1994 through 1996, DOE-RL is performing independent cost estimates and has established indirect cost targets for the entire 2006 Plan that put an emphasis on (1) driving down contractor indirect costs significantly more than programs will be reduced, and (2) maintaining consistent reductions each year. These savings are applied directly to additional cleanup work.

Figure 2-7. Indirect Costs Reduced 26% From Fiscal Year 1994 Through Fiscal Year 1996.

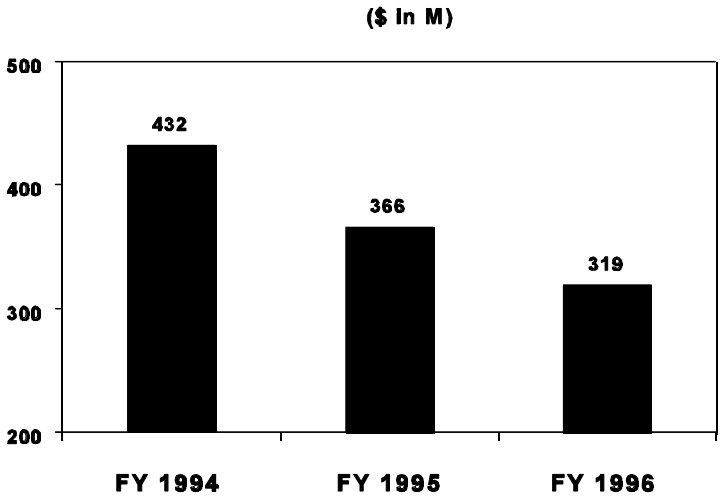
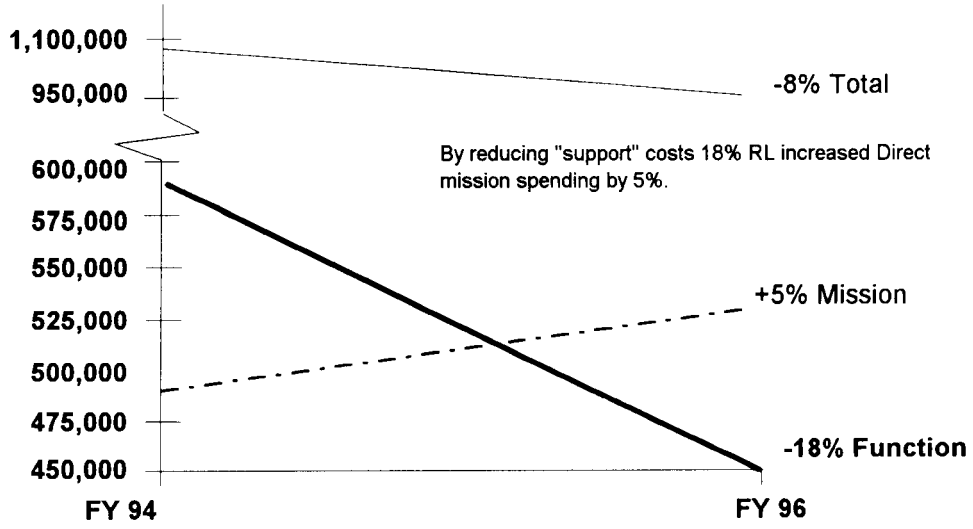


Figure 2-6. Richland Operations Office Support Cost - Fiscal Year 1994 Through Fiscal Year 1996.



2.5 SITE COST MANAGEMENT

2.5.1 Prioritization of Work

This section summarizes the priorities and goals that set the context for developing the Hanford Site 2006 Plan. The Hanford priorities and goals have been developed by senior DOE-RL officials and established through the Hanford Site strategic planning process. These priorities guide decisions concerning the work scope to be completed within the next 10 years. The process includes input from regulators, stakeholders, and Tribal Nations.

Five cleanup mission priorities and specific strategies for executing each priority have been defined. Priority actions, in order of magnitude, are to (1) maintain essential safety operations, (2) mitigate urgent risks, (3) reduce and eliminate costly mortgages, (4) treat/disposition legacy wastes, and (5) recover land for beneficial use.

Maintain Essential Safety Operations. Essential safety operations are those site activities that must be conducted to protect the health and safety of the public, workers, and environment. These actions do not move toward interim or final endpoint cleanup targets but do achieve or maintain what is, in effect, an interim safety target, and maintain the high levels of worker and public safety to which the Hanford Site aspires. A measure of progress for the Hanford Site cleanup mission will be a visible reduction in the magnitude of work in this category of essential safety operation activities.

Mitigate Urgent Risks. The DOE environmental management organization has identified three urgent risks across the DOE complex, all of which are present at the Hanford Site: unstabilized plutonium, high-level waste tanks, and corroded spent nuclear fuel.

Essential priority activities that will mitigate urgent risks at Hanford include:

- Resolving urgent tank safety issues
- Safely moving spent nuclear fuel away from the Columbia River and into safe stable storage
- Stabilizing plutonium in the Plutonium Finishing Plant
- Cleaning out the 324 Facility B Cell and the 300 Area legacy waste.

Reduce Costly Mortgages. Nuclear or other contaminated facilities that have not been deactivated require substantial resources for continuing surveillance and maintenance to maintain minimum levels of safety and containment of hazards. The top priorities actions in this category include deactivation of the following facilities:

- Plutonium Uranium Extraction Facility (PUREX)
- B Plant

- Laboratory facilities - 324/327 project
- 300 Area fuel supply
- Advanced reactors (excluding Fast Flux Test Facility), nuclear energy legacies, and 309 Facility.

In addition, the SST Farms are being stabilized, cleaned up, and outfitted with enhanced monitoring to reduce the routine costs of surveillance and maintenance.

Treat/Disposition Legacy Wastes. Treatment and disposition of legacy waste entails those actions that achieve interim or final endpoints for the materials not dealt with under priorities 2 and 3. These actions include treatment and disposal of tank and solid wastes.

Recover Land (and Other Resources) for Beneficial Use. Land and natural resource recovery actions move toward accomplishment of the interim and final endpoint targets specific to the Hanford Site geographic areas. These recovery actions include:

- Remediation of waste sites in the 100 and 300 Areas.
- Groundwater remediation activities in the 100 Area.

2.5.2 Stretch/Breakthrough Opportunities

The following types of stretch/breakthrough opportunities are identified in this plan (See Table 2-2): Stretch goals and schedule accelerations to reduce mortgages by accomplishing activities better, faster, and cheaper: privatization initiatives (Section 5.0); technology breakthrough (Section 2.3.6) and future goals to reduce the indirect and other functional support costs at Hanford.

2.6 STAKEHOLDER INVOLVEMENT

The public has been a key element in developing the Hanford Site cleanup program since the late 1980's. The signing of the Tri-Party Agreement and several key stakeholder activities have strengthened the decision-making processes. These significant events include meetings of the Future Site Uses Working Group in 1992, the Tank Waste Task Force in 1993, and the formation of the Hanford Advisory Board in 1994. In each case a wide range of regional stakeholder and Tribal Nations interests are represented. The first two groups met for several months before issuing final reports that identified stakeholder values and principles.

Table 2-2. Summary of Potential Stretch or Breakthrough Opportunities and their Benefits (Currently NOT in Baseline). (2 sheets)

Project	Stretch/Breakthrough Opportunities	Benefit		
		Baseline Completion	Stretch/ Breakthrough Completion	Potential Cost Savings (10 Years)
Facility	Accelerate Plutonium Finishing Plant (PFP) deactivation (Stretch goal)	9/06	9/05	$50 million
Transition	Reduce Plutonium Storage Cost (Breakthrough)	N/A	2006	$30-$40 million $500 million (life cycle)
	Accelerate 324/327 Buildings deactivation (Stretch goal)	9/02	9/01	$15 million
	Further accelerate 324/327 Buildings deactivation through application of innovative technology (Breakthrough)	9/02	9/00	$25 million
	Accelerate K-Basin deactivation schedule (Stretch goal)	12/05	10/04	$16 million
Transition (Cont'd)	Accelerate 300 Area revitalization	TBD	TBD	$15 million
	Accelerate T-Plant deactivation	TBD	NLT 2006	$60 million $450 million (life cycle)
Environmental Restoration	Limit services provided that are beyond those required in commercial industry	Ongoing	N/A	$150 million (life cycle)
	Perform additional work on cost estimates in the Project baseline	Ongoing	N/A	$30 million
	Reduce cost of labor, through improved productivity	Ongoing	N/A	$25 million
	Implement Federal Acquisition Streamline Act and Federal Acquisition Reform Act	Ongoing	N/A	TBD
	Finalize and implement burial ground strategy and apply emerging characterization technologies for waste sorting and segregation	Ongoing	N/A	$200 million (life cycle)
	Optimize approach to interim safe storage of reactors and apply emerging D&D technologies	2014	2006	$35 million (life cycle)
	Partner with the DOE Office of Science and Technology	Ongoing	N/A	TBD
Waste Management	Reduce CH-TRU Inventory	2006 (55%)	2006 (90%)	TBD
	Reduce CH-LLMW Inventory	2006 (80%)	2006 (100%)	TBD
	Consolidate liquid LLMW streams currently being treated elsewhere on-site (Breakthrough)	TBD	2006	TBD

Table 2-2. Summary of Potential Stretch or Breakthrough Opportunities and their Benefits (Currently NOT in Baseline). (2 sheets)

Project	Stretch/Breakthrough Opportunities	Benefit		
		Baseline Completion	Stretch/ Breakthrough Completion	Potential Cost Savings (10 Years)
	Consolidate analytical services (Breakthrough)	TBD	2006	TBD
Tank Waste Remediation	Reduce volume of vitrified HAW (pretreatment breakthroughs)	TBD	TBD	$1-4 billion (life cycle)
	Review waste retrieval plans when risks are better understood*	TBD	2006	$1-3 billion (life cycle)
	Package Cs and Sr capsules for near surface disposal (INEL's Bin 7)	TBD	TBD	$50 million (life cycle)
	Reduce requirements for HAW canister storage capacity	TBD	TBD	$750 million (life cycle)
	Review tank closure criteria*	TBD	2006	$500 million (life cycle)
Science & Technology	DC arc melter glassify LLMW	TBD	TBD	$100 million $250 million (life cycle)
	Eliminate 300 Area dependency on 340 Facility and the Radioactive Liquid Waste System (Stretch goal)	1999	1998	TBD
	Develop and implement a Waste Generator Cost Recovery System (Breakthrough)	TBD	TBD	TBD
Other	Outsourcing, Spin-offs, Privatization	TBD	TBD	$100 million $200 million (life cycle)
	Enterprise Company Cost Efficiencies	TBD	TBD	$200 million $600 million (life cycle)

*The Tank Waste Remediation System Final Environmental Impact Statement (DOE/EIS-0189) Record of Decision committed to formal program re-evaluations in response to National Research Council recommendations.

CH = Contact-handled
D&D = decontamination and decommissioning
DOE = U.S. Department of Energy
ETF = Effluent Treatment Facility
HAW = High Activity Waste
INEL = Idaho National Engineering Laboratory
LAW = Low Activity Waste
LLMW = Low-level mixed waste
PFP = Plutonium Finishing Plant
R&D = Research and development
SCF = Waste Sampling and Characterization Facility
S&M = Surveillance and maintenance
TBD = to be determined
TRU = Transuranic (waste)

The Hanford Advisory Board has become a key element in the stakeholder involvement process. Individually and collectively, members of the Hanford Advisory Board and the Tribal Nations have participated in 2006 Plan discussions and briefings since July 1996. The DOE has held monthly updates with the Washington State Department of Ecology and the U.S. Environmental Protection Agency on the status of the fiscal year 1999 budget and 2006 Plan processes.

An Integrated Priority List (IPL) of Hanford Site work proved to be a successful tool for developing and submitting the fiscal year 1998 budget request (the development process included stakeholder participation and support). Stakeholders and Tribal Nations representatives participated in workshops to evaluate risk, develop the IPL, and to provide advice on how to represent stakeholder values and principles. A similar process is being used for the fiscal year 1999 budget preparation. Two workshops have been held with regulators, Tribal Nations representatives, and stakeholders to develop the first draft fiscal year 1999 IPL. Copies of the March 11, 1997 draft Integrated Priority List were made available for further regulator, Tribal Nations, and stakeholder review.

On March 13, 1997, an all-day public workshop was held in Richland, Washington, to discuss the fiscal year 1999 budget and the 10-year vision. Public meetings were also held in Spokane, Washington; Portland, Oregon; and Seattle, Washington. A formal public comment period will continue upon release of the draft 2006 Plan by DOE-HQ. Ongoing dialogue with regulators, Tribal Nations, and stakeholders will occur through September 9, 1997, to build consistency between the vision of the 2006 Plan Summary and its underlying project baseline summaries.

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3.0 2006 PLAN (FISCAL YEAR 1997 - FISCAL YEAR 2006)

3.1 KEY ASSUMPTIONS

Several key assumptions are factored into the development of the Hanford Site cleanup mission. Key assumptions used in the development of the Ten-Year Plan follow. These assumptions apply to the EM mission, and not just the ten-year window.

- Access to DOE land used for disposal of radioactive waste will remain restricted as long as necessary to ensure adequate protection of human health and the environment.

- A final decision on the Comprehensive Land Use Plan will be made in the NEPA process through the Hanford Remedial Action Environmental Impact Statement. Final decisions on the level of cleanup to be performed on individual waste sites will be made in the CERCLA response action or RCRA permit processes.

- Nuclear materials and high-level waste will eventually be sent offsite. Onsite interim, safe, stable storage will be required.

- Groundwater use will remain restricted for a yet-to-be-determined period of time. Final cleanup levels will be established in individual CERCLA records of decision or in RCRA permit modifications.

3.2 TEN-YEAR ENDPOINT TARGETS

By the end of fiscal year 2006, risks and costs will be greatly reduced or eliminated, fixed mortgage costs will be significantly reduced, and increased progress will be made in the cleanup of legacy wastes. The "minimum safe operating" portion of the Site's fixed costs will be reduced by more than half by the end of fiscal year 2006. This will result in a higher percentage of the total budget being applied to cleanup efforts.

The projected Site status in fiscal year 2006 is shown in Table 3-1.

3.3 TEN-YEAR CLEANUP SCHEDULE

The Site Summary Schedule (refer to Appendix D) has a highlighted 10-year window that portrays major accomplishments.

Table 3-1. Projected Site Status - Vision 2006 (High Funding Scenario).

Urgent risks eliminated	• Plutonium Finishing Plant Plutonium stabilized (2002) • All high priority tank safety issues resolved (2001) • All single-shell tank farms interim stabilized (2000) • All tanks characterized (2000) • K Basin fuel removed (2000) • K Basin spent fuel in dry storage (2001) • K Basin sludge removed (2001) • Hanford spent nuclear fuel in interim dry storage (2003)
Costly mortgages reduced	• Deactivated and turned over to Environmental Restoration: - Plutonium Uranium Extraction Facility (PUREX 1997) - B Plant (1998) - T Plant to be determined (TBD) - *Breakthrough: Accelerate deactivation to no later than 2006* - 324 and 327 (2002) - *Stretch Goal: 2001* - *Breakthrough: 2000* - K Basin (2005) - 309 Building (2000) - Accelerated deactivation of 18 small facilities* • Nuclear Energy Legacy Sodium Disposition complete (2002) • ~34 vacant landlord facilities demolished* • 38 surplus facilities decontaminated and decommissioned* • Plutonium Finishing Plant (except vault facilities) deactivation complete (2006) - *Stretch Goal: 2005* - *Breakthrough: Evaluate possibility of $30-40 million in plutonium storage cost savings by 2006* • 300 Area Revitalization - 27 contaminated buildings deactivated - 73 clean buildings decommissioned or converted to alternate use
Reactors along the Columbia River and waste sites dispositioned	• 4 of 9 reactors in interim safe storage - *Breakthrough: 8 of 9 reactors in safe storage* • 2.6 million cubic yards of soil disposed of in the Environmental Restoration Disposal Facility* - *Breakthrough: 4.0 million cubic yards* • 410 waste sites complete (100-200-300 Areas)* - *Breakthrough: 560 waste sites*
Tank waste disposal underway	• Waste removal initiated on 10 single-shell tanks (2006) • Approximately 6% to 13% of tank waste treated by privatized contractors (2006)* • Immobilized low-activity waste storage facilities operational; immobilized high-level waste in interim storage
Stored solid waste reduced	• 55% of transuranic waste shipped to the Waste Isolation Pilot Plant (2006)* • 80% of mixed waste treated and disposed (2006) - *Breakthrough: 100% treated and disposed* • Spent nuclear fuel removed from T Plant Canyon (2001) • Operations in T Plant at hot standby (1999)

*Candidates for applying up to $2.5 billion potential savings to accomplish additional Site cleanup.

3.4 TEN-YEAR COST PROFILE

The 10-year cost profile is shown in Figure 3-1. Near-term costs have increased due to recent changes in critical near-term activities, such as the Spent Nuclear Fuel Project requirements and the site computer software systems change needed for Year 2000 and beyond. Through deferral of work that is not critical and achieving the aggressive annual indirect targets, the accomplishments and endpoints will still be realized at the high funding scenario level (refer to Section 4.1).

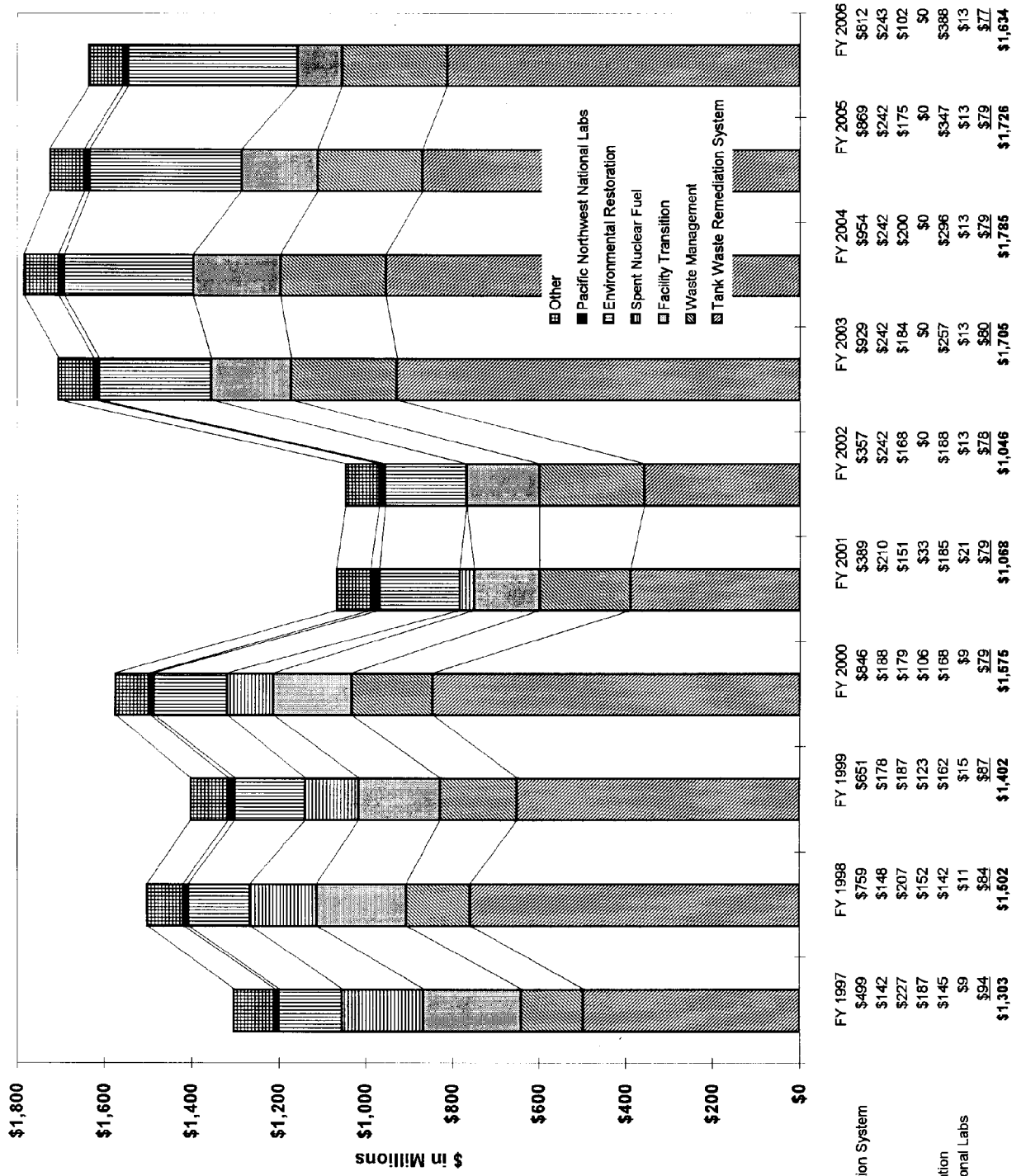
3.5 ASSESSMENT OF CLEANUP AFTER 10 YEARS

There will be a substantial amount of cleanup progress at the Hanford Site at the end of 10 years, but a significant amount will remain. Project activities for Waste Encapsulation and Storage Facility (WESF) through 2006 include only safe operation and maintenance. The minimum-safe operations activities are projected to last until 2013. These near-term WESF activities include the return of all 300 Area cesium and strontium capsules to WESF by fiscal year 1998, reencapsulation of failed and suspect capsules, the decoupling of WESF and B Plant facilities, and assurance of safe storage capability at WESF. Risks to the public, workers, and the environment associated with the cesium and strontium capsules in WESF or an alternative location will remain until the approximately 1,900 cesium and strontium capsules can be disposed of or returned safely and cost-effectively to beneficial use.

By 2006, tanks will be interim-stabilized and waste retrieval operations will have begun. Waste retrieval from single-shell tanks and miscellaneous underground storage tanks will continue until 2018. Waste retrieval from the double-shell tanks will have barely begun and is projected to continue until 2028. Tank farm closure is not projected until 2032. While stabilization activities will significantly reduce the risks to workers and the public from low-probability/high-consequence events, the public, worker, and environmental risks associated with the Tank Waste Remediation System waste retrieval project will remain until the retrieval operations are complete. Associated with these risks are those risks related to handling and processing (i.e., waste vitrification operations).

After 2006, more than 700 waste sites will remain to be dispositioned in the 200 Areas. Current planning assumptions are to stabilize the 200 Area waste sites and close them in place. All the 200 Area and 300 Area facilities will require final disposition (i.e., REDOX Canyon Facility, U Plant Canyon Facility, PUREX Canyon Facility, B Plant Canyon Facility, T Plant, Plutonium Finishing Plant (PFP), 300 Area Fuels Complex Facilities, 324/327 Hot Cells/Buildings and K-Basin Facilities). Final disposition of the 100 Area reactors will be completed. The initial activities related to groundwater containment/treatment and vapor extraction in the 200 West Area will be completed by 2006; however, groundwater remediation activities beyond this initial phase will not be determined until final cleanup levels are established within the individual records

Figure 3-1. Ten-Year Cost Profile.



	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Tank Waste Remediation System	$499	$759	$651	$846	$389	$357	$929	$954	$869	$812
Waste Management	$142	$148	$176	$188	$210	$242	$242	$242	$242	$243
Facility Transition	$227	$207	$187	$179	$151	$168	$184	$200	$175	$102
Spent Nuclear Fuel	$187	$152	$123	$106	$33	$0	$0	$0	$0	$0
Environmental Restoration	$145	$142	$162	$168	$185	$188	$257	$296	$347	$388
Pacific Northwest National Labs	$9	$11	$15	$9	$21	$13	$13	$13	$13	$13
Other	$94	$84	$87	$79	$79	$78	$80	$79	$79	$77
Total	**$1,303**	**$1,502**	**$1,402**	**$1,575**	**$1,068**	**$1,046**	**$1,705**	**$1,785**	**$1,726**	**$1,634**

of decisions or permit modifications. Activities extending beyond 2006 have relatively low public

and worker risks associated with them. However, some (e.g., the groundwater remediation and soil sites/reactors along the Columbia River) have substantial social, cultural, and stakeholder concerns.

Disposition of Legacy Materials and Facilities. This section summarizes the projected progress toward final disposition of Hanford's legacy materials and facilities as follows: spent fuel, environmental restoration, facilities deactivation and transition, tank waste, and waste operations (Figures 3-2 through 3-16). The figures show the extent to which these problems have been resolved.

- **Spent Fuel**

Figure 3-2. N Fuel in Interim Storage.

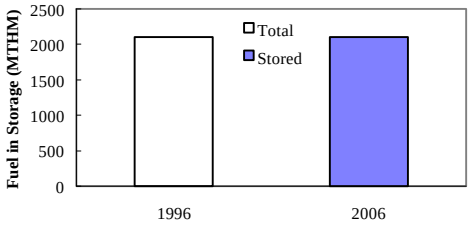
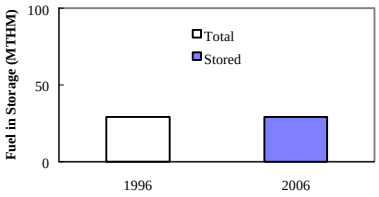


Figure 3-3. "Other" Spent Fuels in Interim Storage.



- **Environmental Restoration**

Figure 3-4. Remedial Action Sites Closed.

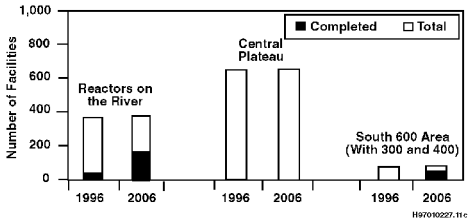


Figure 3-5. Facilities D&D.

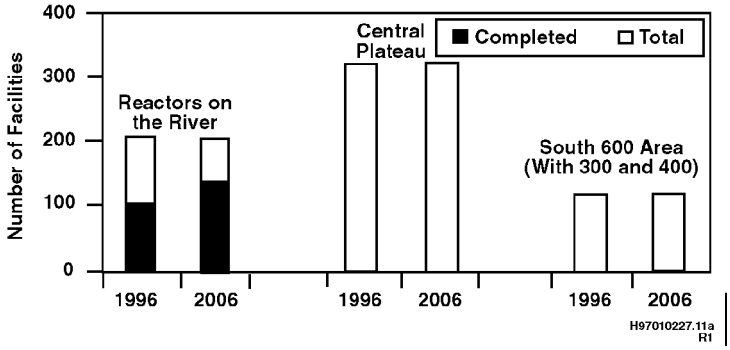
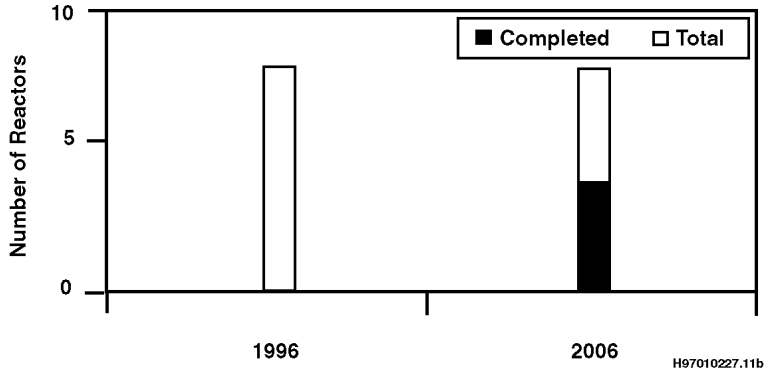


Figure 3-6. Reactors in Interim Safe Storage.



- **Facilities Deactivation and Transition**. All major facilities will have been deactivated by 2006 except for PFP vaults, T Plant, and WESF

- **Tank Waste**

Figure 3-7. Tank Characterization Reports.

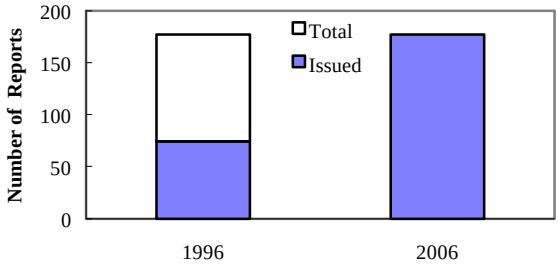


Figure 3-8. Tanks Removed From Watch List.

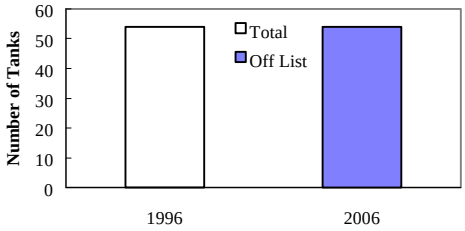


Figure 3-10. Tank Farms Controlled, Clean, and Stable.

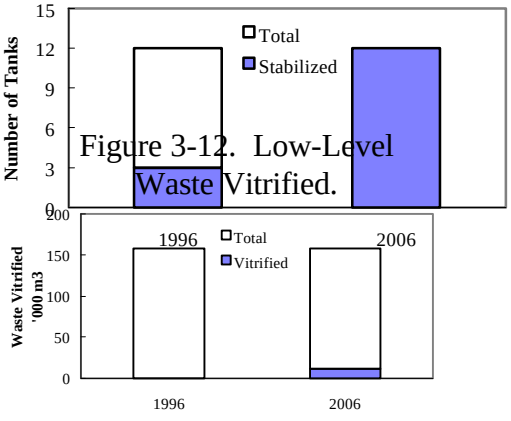


Figure 3-9. SSTs Stabilized.

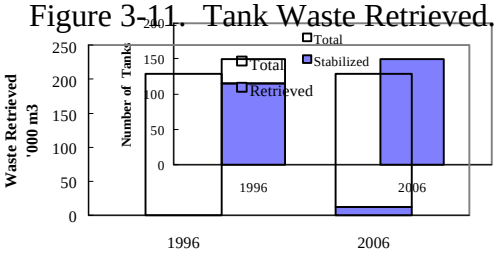


Figure 3-11. Tank Waste Retrieved.

Figure 3-12. Low-Level Waste Vitrified.

Figure 3-13. High-Level Waste Vitrified.

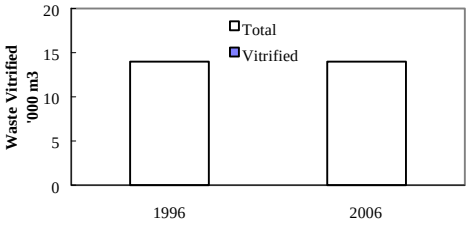
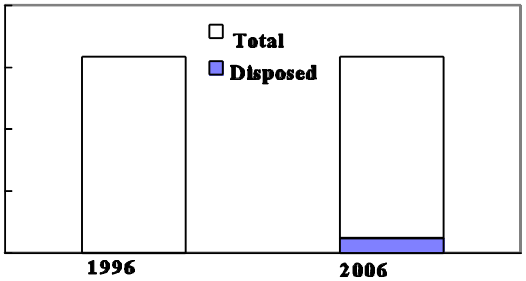


Figure 3-14. Low-Activity Waste Disposed.



- **Waste Operations**

Figure 3-15. Mixed Low-Level Waste in Storage.

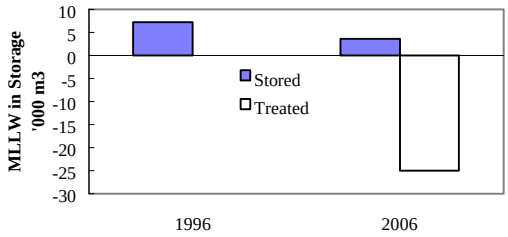
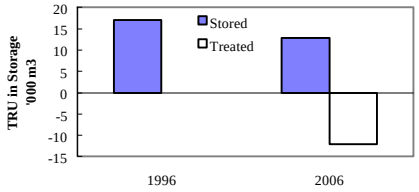


Figure 3-16. TRU in Storage.



4.0 SITE FUNDING SCENARIOS SUMMARY

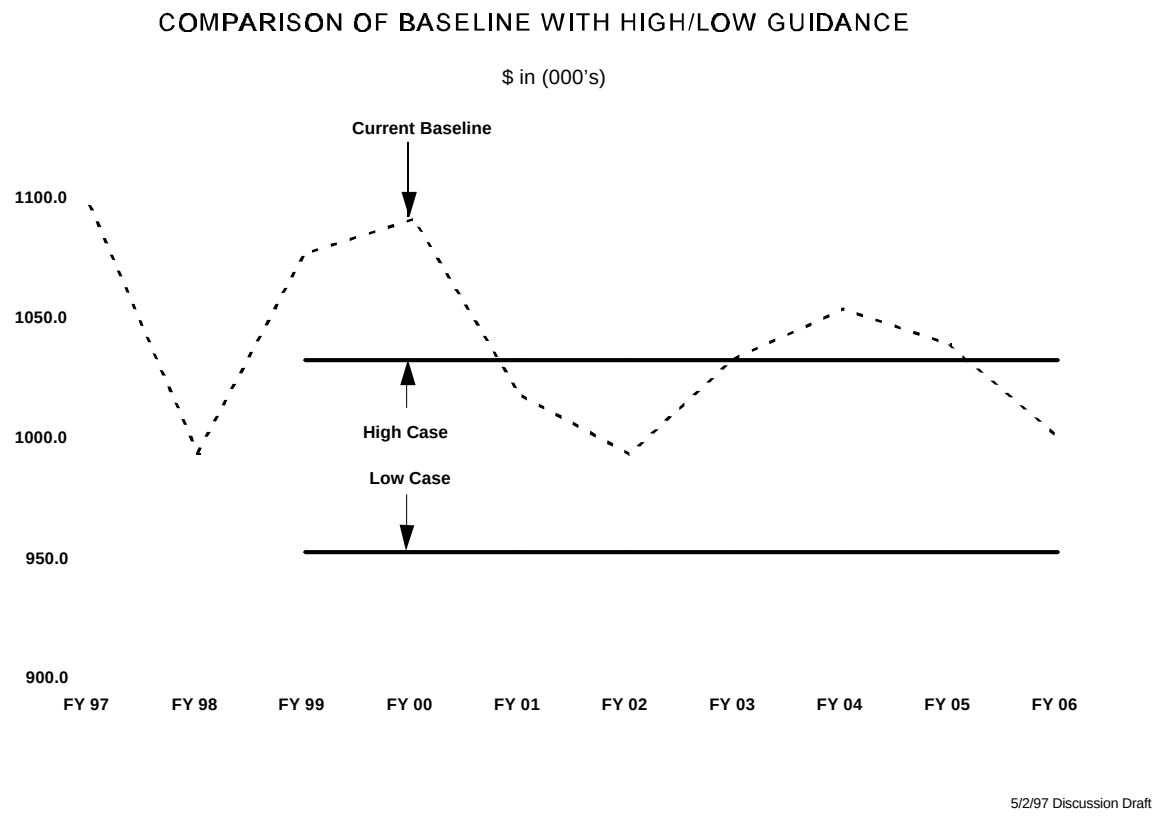
To support on-going discussions on planning assumptions within the DOE and with the Office of Management and Budget (OMB), cleanup scope, schedule, and cost are addressed under two distinct funding scenarios. Application of realized cost efficiencies to additional cleanup scope could mitigate the compliance impacts of the high funding scenario and lessen the impacts of the low funding scenario.

4.1 HIGH SCENARIO ($6 BILLION; ~$1.021 BILLION FOR THE HANFORD SITE)

The high funding scenario supports the Hanford Site cleanup plan, and will result in acceleration of mortgage reductions and cleanup actions by fiscal year 2006. All DNFSB commitments are completed as currently scheduled. However, changes have occurred to the existing plans, which result in funding needs that exceed the high funding scenario through fiscal year 2000, as Figure 4-1 portrays. These increases are primarily attributed to the following:

- Increased technical requirements for the Spent Nuclear Fuel project
- Needed resources to cover computer software conversions for Year 2000
- Short falls in fiscal year 1997 and fiscal year 1998, along with other emerging workscope in fiscal year 1997.

Figure 4-1. Funding Profile.



A significant cost increase in the years 2002 through 2006 was caused by the addition of the operations and utility services provided to the Tank Waste Disposal privatization facilities. This had previously been considered as part of the privatization budget.

Through delays in starting a few noncritical projects and the incorporation of an aggressive plan for reduction of indirect costs at the site, the higher funding needs have been leveled within the 10-year funding profile. Critical to success at the higher funding scenario are the following assumptions:

- The Fast Flux Test Facility will be transferred to and funded by Nuclear Energy and will not be included in the Ten-Year Plan.
- Minimal treatment will be required for the K-Basin sludge before transfer of the sludge to the tanks.
- Both TWRS Privatization construction and operations funds are in addition to the current ceiling for Site funds.

The stretch goals and breakthroughs discussed in Section 2.5.2, along with efficiencies in

indirect and other support costs are estimated to potentially save $2.5B through 2006. At the high scenario, $0.5B has been incorporated for projected reductions in indirects.

If the remaining $2.0B is realized at the high funding scenario, the following activities would be accelerated, resulting in reductions to the life-cycle costs for cleanup:

- Starting physical remediation activities on the 200 Area Plateau
- Accelerating cleanup in areas along the Columbia River
- Accelerating 300 Area Revitalization Project, resulting in earlier reduction in mortgage costs
- Increasing the number of general purpose facilities removed from the site, resulting in elimination of maintenance/repairs for safety (e.g., roof repairs)
- Accelerating portions of the PFP deactivation, resulting in earlier reduction in surveillance and maintenance costs and a reduction in the hazard exposure to workers.

If the cost efficiencies are not realized, within the Environmental Restoration Project there will be a one-year delay in completion of the 300-FF-1 remediation (resulting in one missed TPA milestone), a three-year delay in the start of the 200 Area remedial actions (9 missed TPA milestones), a one-year delay in remedial design for the 100 Area remaining liquid waste sites (CERCLA record of decision impacted), and a decrease in RCRA/CERCLA sitewide groundwater monitoring and well decommissioning (resulting in failure to meet additional TPA commitments).

Benefits of Achieving Hanford Site Cleanup Goals. Ultimate benefits accrued from cleanup activities include reduced risks, enhanced public and worker safety, mortgage reduction, legacy materials and facilities dispositioned, and land made available. If the $2.5B cost efficiencies are met, anticipated life-cycle cost is reduced approximately $16B.

Risk Reduction. Table 4-1 summarizes the primary risk reductions that result from implementing this plan. Five of these activities are highlighted as the primary public health and worker risk reduction activities: Plutonium Finishing Plant plutonium stabilization (part of Plutonium Finishing Plant project); K-Basin safe removal of SNF, sludge, and tritiated water away from river (part of Spent Nuclear Fuels project); 300 Area Fuel Complex cleanup (part of the 300 Area SNM Project); B-Cell clean out and 300 Area legacy waste removal and cesium chloride removal (part of 324/327 Transition project); and single-shell tank stabilization (part of Tank Farm Operations project).

Table 4-1. Summary of Risk Reduction Benefits of Hanford's 2006 Plan.

	Risk Reduction Achieved Through 2006
Spent Fuel	• K-Basins no longer pose environmental risk to the river or public risk due to accidents.(*) • Other spent fuel accident risk substantially lower.
Environmental Restoration	
Soil Sites (Remedial Action Project)	• Soil site risks are consistent with residential cleanup standards (100 Area) and industrial clean up standards (300 Area).
Groundwater	• K, H/D, and N plumes are intercepted before entering the river, so environmental risks are reduced. • 200-U and Z plumes are contained, preventing long-term environmental risk to the river.
Facilities D&D	• Risks from potential contamination spread and accidental intrusion are reduced. • Safety risks from old ancillary facilities are reduced (100 Area).
Facility Deactivation and Transition	• The B Plant, WESF, PUREX, and PFP deactivation projects reduce the 200 Area accident potential substantially for public, workers, and the environment. Associated safety buffer zones are smaller.(*) • PFP plutonium stabilization complete (*) • CsCl and other 300 Area materials have been removed and no longer pose an accident risk to nearby populations.(*) • 324 Building B-Cell contamination has been removed or stabilized and B-Cell has been deactivated.(*) • Materials moved to a 200 or 400 Area interim storage pad are further from the public so public risk is lower.
Tank Waste	• All safety issues have been mitigated or resolved and accident risks are greatly reduced. • All tank farms are interim stabilized.(*) • Long-term risk to groundwater and the river decreases are proportional to retrieval. • Initiation of waste treatment further increases accident potential but marks onset of long-term reduction in exposure potential to both workers and public.
Waste Operations	• Risk reduction is proportional to inventory reduction and to reduced accident potential as waste is stabilized. Inventory reduction includes 55% of TRU waste shipped to WIPP; 80% of low-level mixed waste treated and disposed

(*)Activities offering greatest public health and worker risk reduction in 10 years.
PFP = Plutonium Finishing Plant
PUREX = Plutonium Uranium Extraction Facility
TRU = transuranic waste
WESF = Waste Encapsulation and Storage Facility
WIPP = Waste Isolation Pilot Project

Mortgage Reduction. The greatest mortgage reduction results from deactivation of PUREX, B Plant, non-vault related areas of PFP, 300 Area Fuels Complex, and Advanced Reactors, and reducing surveillance and maintenance costs for single-shell tanks. Additional reductions were outlined in Table 3-1.

4.2 LOW SCENARIO ($5.5 BILLION; $950 MILLION FOR THE HANFORD SITE)

For this funding scenario, a priority is maintained on elimination of urgent risks, reductions in large mortgages, and tank waste disposal privatization support. As a result, significant delays in other projects are incurred at this funding level. In order to minimize these impacts, especially in the outyears, a more aggressive reduction plan for indirect costs is included at the low funding scenario. Whereas compliance is maintained with respect to regulations and DNFSB commitments, numerous TPA milestones are impacted and would require renegotiations.

The same assumptions noted for the high funding scenario apply at the low funding level. In addition to the noncritical projects delayed under the high funding scenario, the following highlights some of the more significant potential results from the low funding scenario:

- Two to 10 years of increased risk to workers and the environment because of deferred disposition of stored mixed waste and transuranic waste. This deferral will increase stored waste inventories and delay shipments of waste to the Waste Isolation Pilot Plant. This impacts TPA milestones M-18, M-19, and M-91, placing DOE-RL at risk for enforcement action by regulators.

- An increase in risk to workers and the environment and $150 million in additional costs for a 6-year extension of surveillance and maintenance of 300 Area contaminated facilities. This added expense diverts funds from cleanup activities to accommodate recent additions of critical near-term activities. The extension also delays revitalization of the 300 Area for alternative economic use.

- An increase in risk to workers and the environment and $34 million in additional costs for a 2-year extension of surveillance and maintenance of contaminated facilities with no currently identified mission and of facilities not expected to have a viable mission after fiscal year 2000—potentially there are 34 facilities in this group. This extension is also caused by diversion of funds from cleanup activities to accommodate recent additions of critical near-term activities.

- An 8-year delay in completing waste site assessment of the 200 Area. This delay impacts Tri-Party Agreement milestones M-13, M-15, and M-16, plus 20 or more interim milestones, placing DOE-RL at risk for enforcement action by regulators.

5.0 PRIVATIZATION

Privatization is another breakthrough that is designed to save taxpayer dollars. Several Hanford projects have already been privatized, and there are many more potential candidates. By contracting work to private companies, work is being performed for less money. Table 5-1 summarizes the Hanford Projects privatized to date. Potential candidates for privatization are identified from time to time; information on these opportunities will be provided at a later date.

Table 5-1. Hanford Projects Privatized To Date (2/97).

Project	Description
Tank Waste Remediation System	The highest cost activities anticipated at the Hanford Site are the retrieval and treatment of the waste in the high-level waste tanks to produce high-level waste canisters of glass and immobilized low-level waste. This activity is now being privatized in a two-phase approach. The privatization is being done to maintain competition, with two contractors competing for the work. The first phase is underway, the second-phase contracts will be let in 2006, and completion of the waste processing activities is expected in 2028.
Solid Sanitary Waste Disposal	The functions of the Hanford Landfill, which has been operated for the life of the site, have been transferred to other entities in agreement with the Washington State Department of Ecology. The City of Richland Landfill is receiving the majority of the sanitary wastes. Asbestos, medical, and drummed waste are being sent to other locations for disposal.
Hanford Fossil Fuel Services	Refueling services to the DOE fleet are now being provided by automated service stations. A General Services Administration credit card is used by drivers to access gasoline. This has eliminated the need for attendants and also provides for automated entry of vehicle mileage for improved driver reporting and monitoring. It also reduces the need for DOE monitoring of the fueling inventory and accounting. The fuel provider is paid based on the amount of gasoline used. Conoco is the company currently providing the service to the Hanford Site.
Hanford Laundry	The cleaning of all site radioactive and nonradioactive laundry, and the cleaning and decontamination of respirators is now provided by Interstate Nuclear Services (INS). In addition to providing services to the Hanford Site, INS is also providing laundry services to Washington Public Power Supply System and to Rocky Flats. The contract avoided the construction of a new $24 million DOE facility and has resulted in cost savings of about $4 million per year in operations.
Columbia River Exhibition of History, Science, and Technology (CREHST)	DOE previously operated the Hanford Science Museum from overhead funds. During the need to reduce budgets in 1995, the museum was to be eliminated. However, with much effort by many in the Tri-Cities, the museum was privatized with the formation of the Environmental Science and Technology Foundation. The scope of the effort was increased to include agriculture, geology, river management, and history of the region. The funding for the construction and operation of a new center is being provided by the community, supporting businesses, and corporations. CREHST still works to support DOE through the storage of historical artifacts and provides information on the technology developed at the Site.
Hanford Mail Services	The Site mail services are now provided by a private contractor, Jantec Inc. Jantec provides sitewide delivery and pickup service, including interplant and U.S. mail. They handle about 17,400,000 units per year to about 800 mail stops onsite. They also perform mail list addressing of large distributions and prepare and meter outgoing U.S. Postal mail.
Mixed Waste Thermal Treatment	Future thermal treatment of some contact-handled low-level mixed waste (waste that contains both radioactive and hazardous components) is planned to be provided by the Allied Technology Group (ATG) Thermal Treatment Facility in Richland. ATG is developing a gasification/vitrification treatment system that will be used for Hanford wastes and, potentially, other mixed wastes in the DOE complex. The service is expected to start in November, 2000, and will treat up to 717 cubic meters of Hanford waste per year. The termination liability for DOE is $2.5 million over the 5-year start-up period (1995-2000).
Energy Savings Performance Contract	This contract is to improve the efficiency of the Hanford Site heating systems; it incorporated energy conservation improvements in the 200 and 300 Areas in a two-phase approach. A letter contract is in place, with negotiation of specific details still being resolved. Several potential approaches are possible including replacing or upgrading current steam plants or developing alternative heating methods. This is expected to be a multi-million dollar contract.

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